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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/934,847	08/23/2001	Stacy William Nichols	502P60US	9126
26123	7590	06/02/2005	EXAMINER	
BORDEN LADNER GERVAIS LLP			WONG, BLANCHE	
WORLD EXCHANGE PLAZA			ART UNIT	
100 QUEEN STREET SUITE 1100			PAPER NUMBER	
OTTAWA, ON K1P 1J9			2667	
CANADA			DATE MAILED: 06/02/2005	

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.		Applicant(s)	
	09/934,847		NICHOLS ET AL.	
	Examiner		Art Unit	
	Blanche Wong		2667	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 August 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) 24 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-12, 19-23 and 25-28 is/are allowed.
- 6) ☒ Claim(s) 13-18 is/are rejected.
- 7) ☒ Claim(s) 4, 13, 18 and 19 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 23 August 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|-------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>11/16/2001</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. **Claims 1-23 and 25-29**, drawn to methods and systems for reordering, resequencing, processing, and/or rebuilding packet fragments, classified in class 370, subclass 394.
 - II. **Claim 24**, drawn to selecting a link, classified in class 370, subclass 429.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions I and II are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct from each other if they are shown to be separately usable. In the instant case, invention II has separate utility such as selecting a link to transmit data after the data fragments are reassembled back to its original packet format. See MPEP § 806.05(d).

3. Because these inventions are distinct for the reasons given above and the search required for Group I is not required for Group II, restriction for examination purposes as indicated is proper.

4. During a telephone conversation with Custis Behmann on May 26, 2005 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-23 and 25-29. Affirmation of this election must be made by applicant in replying to this Office action. Claim 24 is withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Specification

5. The disclosure is objected to because of the following informalities:

- On p. 12, para. [00022] discloses “low” speed and also “low speed”.
Examiner suggests consistency using “low speed”, as oppose to “high speed” which is also disclosed in para. [00022].
- On p. 13, para. [00023], Examiner suggests replacing – transit node 30 – with “transit node 20”.
- On p. 17, para. [00035], Examiner suggests replacing – fragment rebuilding section 16 – with “fragment rebuilding section 160”.
- On p. 31, para. [00067], Examiner suggests replacing – RAM 210 in Fig. 1 – with “RAM 210 in Fig. 3”.

Appropriate correction is required.

Claim Objections

6. Claims 4,13,18,19 are objected to because of the following informalities: In cl. 4, Examiner suggests replacing – resequencing fragments – with “resequencing packet fragments” to make more positive because fragment is loosely defined. Similarly, Examiner suggests replacing – rebuilding fragments – with “rebuilding packet fragments” in cl. 13, replacing – rebuilding fragments – with “rebuilding packet fragments” in cl. 18, and replacing – resequencing fragments – with “resequencing packet fragments” in cl. 19. Appropriate correction is required.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. **Claim 15** is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In cl. 15, ln. 2, it is unclear what is -- said fragments -- where there is only a fragment in ln. 1.

Claim Rejections - 35 USC § 101

9. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

10. **Claims 15-17** are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. A fragment (cl. 15 and 16) and a packet (cl. 17) are data structures.

Claim Rejections - 35 USC § 102

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

12. **Claims 13,15,17** are rejected under 35 U.S.C. 102(b) as being clearly anticipated by White et al. (provided by Applicant).

With regard to cl. 13, White discloses a method of rebuilding packet fragments (a packet reassembly method) comprising:

a) receiving 214 (reassembly hardware) a first chunk (fragment #1 in Fig. 3) of data comprising a first segment of a fragment (In Fig. 3, a data packet is divided into fragments);

b) storing 620 (data buffer, col. 6, ln. 52-54; these buffers constitute sections of the data memory 234 in Fig. 2) said chunk of data in a first block of memory;

c) receiving 214 (reassembly hardware) a second chunk (fragment #2 in Fig. 3) of data comprising a second segment of said fragment (In Fig. 3, a data packet is divided into fragments);

d) placing 620 (data buffer, col. 6, ln. 52-54; these buffers constitute sections of the data memory 234 in Fig. 2) said second chunk of data in a second block of memory contiguous to said first block of memory;

e) linking (the packet reassembly hardware 214 will extract a data buffer pointer from the appropriate queue as needed during reassembly, col. 9, ln. 52-55) said second contiguous block of memory with said first contiguous block of memory; and

f) repeating (the data to be retransmitted back out is assembled by sequentially addressing the segregated memory location, col. 4, ln. 63-66) steps a) – e) until said fragment is complete, wherein said first chunk and said second chunk are received in a sequence which preserves a data integrity of said fragment.

With regard to cl. 15, White discloses a fragment having:

payload comprising a portion of a data packet (Fragment N in Fig. 4), a sequenced number (Sequence number in Fig. 6 as part of Reassembly header of Fig. 4), and a reassembly session number 602 (reassembly ID obtained from Virtual circuit ID in Fig. 5 as part of Packet header of Fig. 4, col. 6, ln. 60).

With regard to cl. 17, White discloses a connection identifier denoting to which grouped of links said packet belongs LUID (source logical unit identification, col. 6, ln. 27-28).

13. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

14. **Claim 18** is rejected under 35 U.S.C. 102(e) as being clearly anticipated by Rana et al. (U.S. Pat No. 6,781,992).

With regard to cl. 18, Rana discloses a system for rebuilding fragments (queue engine for reassembling and reorder data packets) comprising:

a memory bank 30 (fragment memory of queue engine of Fig. 1, col. 4, ln. 26) for storing data chunks, each data chunk being a portion of a fragment;

a linked list pointer table (Fig 3a-3g are data structures used within the elements and associated memory of the queue engine of Fig. 1; data structures and link lists stored in fragment memory 30, col. 4, ln. 25-26), said pointer table having a record of

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which specific memory locations (head_ptr, next in Fig. 3c, col. 7, ln. 5-10) in said memory bank are used by specific data chunks wherein each data chunk relating to a specific fragment is stored in a specific memory location, an address (pointers) of such specific memory location being placed in said pointer table and linked to addresses of previously stored data chunks.

Claim Rejections - 35 USC § 103

15. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

16. **Claim 14** is rejected under 35 U.S.C. 103(a) as being unpatentable over White et al. (provided by Applicant).

With regard to cl. 14, White fails to explicitly show that the memory ((data buffer, col. 6, ln. 52-54; these buffers constitute sections of the data memory 234 in Fig. 2) are located in a RAM bank

At the time of the invention, it would have been obvious to a person of ordinary skill in the art that RAM should be used in place of ROM. The suggestion/motivation for doing so would have been to provide for the inputs for reassembly that need to be temporarily stored, and accessible for assembly and retransmission. Therefore, it would have been obvious to use RAM instead of ROM for reassembly to obtain the invention as specified in cl. 14.

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17. **Claims 16 and 29** are rejected under 35 U.S.C. 103(a) as being unpatentable over White as applied to claims 14 and 15 above, and further in view of Rana et al. (U.S. Pat No. 6,781,992).

With regard to cl. 16, White discloses a fragment as in cl. 15. However, White fails to explicitly show an end bit which is set when said fragment is a final fragement in said sequence.

In analogous art, Rana teaches a last_fragment flag to determine if the last fragment in the series have been seen, col. 8, ln. 10-12.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use a last_fragment flag in order to determine the last fragment of a series or sequence. The suggestion/motivation for doing so would have been to provide for fragmentation where there is a maximum limit on the size of packet for processing and transmission. Rana, col. 2, ln. 1-9. Therefore, it would have been obvious to combine Rana with White for the benefit of fragmentation to obtain the invention as specified in cl. 16.

With regard to cl. 29, White discloses the method as in cl. 14. However, White fails to explicitly show a RAM bank that is a SRAM bank.

In an analogous art, Rana uses data buffers of SDRAM 54 Fig. 2 (SDRAM is a subset of SRAM).

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to use SRAM in reassembling and reordering data packets in order to maintain constant trafficking. The suggestion/motivation for doing so would have been to provide for a queue engine that is able to reorder and reassemble data packets at

wire speeds, thereby allowing the scanning of the entire contents of data packets so that state information or awareness can be maintained throughout an entire data traffic flow. Rana, col. 2, ln. 20-25. Therefore, it would have been obvious to combine Rana with White for the benefit of better traffic flow to obtain the invention as specified in cl. 29.

Allowable Subject Matter

1. **Claims 1-12,19-23,25-28** are allowed.
2. The following is a statement of reasons for the indication of allowable subject matter:

With regard to cl. 1 and 2, the prior art of record fails to anticipate or make obvious "determining a first slot position for said received head pointer in a first tier pointer array, "... determining a second slot position for said received head pointer in the second tier pointer array ...", as recited in cl. 1; and "determining a lot position for said received head pointer in a pointer array", as recited in cl. 2. Fichou et al. (U.S. Pat No. 6,870,850) discloses a Table 38 that stores data (col. 5, ln. 2) and a separate Frame buffer 40 that assembles data frame (col. 5, ln. 3). (See also Fig. 3.) However, Fichou fails to show that any tier pointer arrays. Heiman (U.S. Pat No. 6,735,203) discloses header in Fig. 1, pointers col. 9, ln. 49-52, and a two-dimensional re-sequencing table RST1. However, Heiman is not near the setup of the current invention.

With regard to cl. 4, the prior art of record fails to anticipate or make obvious a method of resequencing fragments, comprising "receiving a head pointer for a received fragment, said head pointer representing said received fragement; determining a reassembly session number for said received fragment, said reassembly session

number denoting a home packet of which said received fragment is a part; determining if said home packet of which said received fragment is a part is currently being reassembled; if said home packet is currently being reassembled ...; if said home packet is not currently being reassembled ...; determining a slot position for said head pointer in said point array, said slot position being determined by the number for said received fragment; placing said head pointer in said slot position; and repeating ... until ... a complete sequence ... ", as recited in cl. 4.

With regard to cl. 6, the prior art of record fails to anticipate or make obvious a method of processing data frames in a multiple channel system, comprising "receiving a data frame; determining with which channel said data frame is associated; extracting a payload of said data frame; storing said payload at a memory location specifically associated with said channel; if previous payloads already stored at said memory location, appending said payload to said previous payloads; and repeating ... until a specific condition is met ...", as recited in cl. 6.

With regard to cl. 19, the prior art of record fails to anticipate or make obvious a system for resequencing fragments, comprising "at least one pointer array for each resequencing operation for storing head pointers, each head pointer being associated with a slot in a pointer array based on the sequence number of a fragment represented by said head pointer; and a lookup engine ... ", as recited in cl. 19.

With regard to cl. 21, the prior art of record fails to anticipate or make obvious a system for processing data frames in a multiple channel data transmission system, comprising "a data frame engine for extracting a payload from said data frames; a partial packet processor for storing payloads extracted from said data frames; and

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internal memory bank controlled by said processor such that said payloads are stored in said memory bank ...", as recited in cl. 21.

With regard to cl. 24, the prior art of record fails to anticipate or make obvious a method of selecting a link on which to transmit data in a multiple link system, comprising "determining an amount of data queued for transmission on each link in said multiple link system; determining which link in said multiple link system has the most data queued for transmission; selecting a link with a least amount of data queued from transmission ...; and if all links ... have equal amounts of data queued for transmission, selecting each link in sequence ...", as recited in cl. 24.

With regard to cl. 25, the prior art of record fails to anticipate to make obvious a multiple stage system for processing data stream on a multiple link system, comprising "a first stage for receiving data frames and extracting and storing payloads from said data frames; a second stage for rebuilding fragments from said payloads of said data frames; a third stage for resequencing said fragments ...", as recited in cl. 25.

3. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Blanche Wong whose telephone number is 571-272-3177. The examiner can normally be reached on Monday through Friday, 830am to 530pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chi H Pham can be reached on 571-272-3179. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

BW

May 11, 2005


CHI PHAM
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600

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